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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,321	02/26/2002	Ling-Yuan Tseng	MR1115-381	3452

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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT PAPER NUMBER

2871

DATE MAILED: 01/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

### Office Action Summary

Application No.

10/082,321

Applicant(s)

TSENG ET AL. *AW*

Examiner

Jeanne A. Di Grazio

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 6-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on October 8, 2003 (FIGS 6 and 7) is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Drawings***

The drawings were received on October 8, 2003 per Amendment of October 8, 2003.

These drawings are Figures 6 and 7 which properly now designate Figures 6 and 7 as Prior Art.

The objection to the drawings is withdrawn.

### ***Response to Arguments***

Applicant's arguments with respect to claims 6-10 have been considered but are moot in view of the new ground(s) of rejection.

### ***Status of Claims***

Applicant has cancelled claims 1-5 and 11. Claim 6 has been amended. Claims 6-10 are pending.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford et al. (US 5,978,063).

Per claim 6 (amended): Crawford teaches smart spacers for active matrix liquid crystal projection light valves and method. Crawford has a step of providing a substrate (Figure 9) for a display and the substrate has non-active areas and active areas (Figures 10a-10c, active areas designated by 34 and non-active areas designated by 36)(Applicant's "reflective pads formed on each substrate, the pads being spaced from each other by non-reflective areas"), the regions in Figures 10a-10c represented by inter-pixel regions (Applicant's "each of the micro-displays being associated with a different color whose light emissions together form a color image") (a pixel is composed of sub-pixel regions represented by the colors red, green, and blue which together form a picture element, or pixel); a step of forming a coating on a bottom substrate with a thin coating of negative photoresist or negative UV curable polyimide (Crawford, column 3, lines 45-48)(Applicant's "forming a coating of transparent, non-conductive material on each substrate and over the reflective pads formed thereon; and a photolithographic step to result in the formation of spacers (Applicant's Step 4)(Crawford, column 3, lines 45-48). Crawford also teaches different spacer distributions depending on mask (Figures 10a-10c and column 4, lines 1-67, entire patent).

Crawford does not appear to explicitly specify providing a mask associated with each substrate and the mask having shielded zones of one mask different than shielded zones of another mask.

However, Crawford specifically teaches that the positioning of spacers is decided by a mask design as it is well known to one skilled in the art and by controlling the mask design, spacer distribution and count may also be controlled (Crawford, column 4, lines 7-11). Crawford goes on to teach that spacer position depends on the mask design used to selectively position the spacers (Crawford, column 4, lines 38-39). Crawford furthermore states that “As shown in FIG 10a, spacers may be placed at the intersection of the data lines and the scan lines of the LCD so that they are hidden from and therefore contained only in the non-active areas. ... FIG 10a shows an embodiment in which spacers are provided at the intersection of each data line and scan line. FIG 10b shown an embodiment in which spacers are provided at every fourth intersections. Finally, FIG 10c shows an embodiment in which spacers are randomly distributed throughout the substrate. Other mask designs provide spacers at every sixteen intersections of every thirty-two intersections. Again, spacer distribution and count is precisely controlled based on the mask design. Ideally, the number of spacers is minimized to ensure optimal optical performance.” (Crawford, at Column 4, Lines 38-55).

Crawford is evidence to ordinary workers in the art of liquid crystals that one of ordinary skill in the art would use different mask designs for forming spacers in varying distributions on substrates for optimal optical performance (Applicant’s amended Steps 3 and 4).

Please note that in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom (MPEP 2144.01).

One of ordinary skill in the art of liquid crystals would reasonably be expected to infer that different mask designs would result in variable spacer locations on substrates for optimal optical performance.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals to have a step of providing masks of different shielding zones for varying spacer locations with respect to substrates for optimal optical performance.

Claims 7-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford et al. (US 5,978,063) in view of Jie et al. (US 6,498,635 B1).

Per claims 7-10: Crawford does not appear to explicitly specify the transparent non-conductive material of  $\text{SiO}_x$ ,  $\text{SiO}_2$ ,  $\text{SiN}_x$ , and  $\text{SiN}_2$ .

Jie teaches a method of forming insulating material alignment posts (spacers) associated with active device structures (Jie, entire patent). Jie teaches the alignment posts of silicon nitride / oxide multi-layers for insulation, alignment, and for effective manufacturable methods (Jie, column 1, entire patent).

Jie is evidence to ordinary workers in the field of liquid crystals that spacers made of  $\text{SiO}_x$ ,  $\text{SiO}_2$ ,  $\text{SiN}_x$ , and  $\text{SiN}_2$  are used as insulators, for alignment, and contribute to effective manufacturing methods.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals to modify Crawford in view of Jie for spacers of predetermined distributions with respect to mask shielded regions that are effective insulators, alignment posts, and that contribute to effective manufacturing methods.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (703)305-7009. The examiner can normally be reached on M-F.

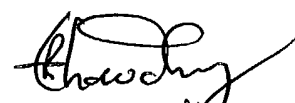
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703)746-8741.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Jeanne Andrea Di Grazio

Robert Kim, SPE

JDG

  
T. Chowdhury  
Primary Examiner